

Claims

Sub 32  
1. An animal cell expressing a gene coding a ligand-responsive transcription control factor and securely maintaining a DNA comprising in a molecule, the following genes (a) and (b):

(a) a reporter gene connected downstream from a transcription control region, in which said transcription control region substantially consists of a recognition sequence of said ligand-responsive transcription control factor and a minimum promoter which can function in said cell; and

(b) a selective marker gene which can function in said cell;

provided that the following gene (c):

(c) a reporter gene connected downstream from a promoter which transcription activity is unchanged by having said responsive transcription control factor contacted with a ligand of said ligand-responsive transcription control factor, said reporter gene (c) coding a protein which can be differentiated from the protein coded by said gene

(a)

is not present in said cell.

Sub B1  
2. The cell according to claim 1, wherein said minimum promoter substantially consists of a TATA box.

Sub C1  
3. The cell according to claim 1, wherein said ligand-responsive transcription control factor is one selected from an allylhydrocarbon receptor, intranuclear hormone receptor, estrogen receptor, androgen receptor and

thyroid hormone receptor.

4. The cell according to claim 1, wherein said ligand-responsive transcription control factor is an allylhydrocarbon receptor.

5. The cell according to claim 1, wherein said ligand-responsive transcription control factor is an intranuclear hormone receptor.

6. The cell according to claim 1, wherein said ligand-responsive transcription control factor is an estrogen receptor.

7. The cell according to claim 1, wherein said ligand-responsive transcription control factor is an androgen receptor.

8. The cell according to claim 1, wherein said ligand-responsive transcription control factor is a thyroid hormone receptor.

9. An animal cell expressing an allylhydrocarbon receptor and an Arnt receptor, and securely maintaining a DNA comprising in a molecule, the following genes (a) and (b):

(a) a reporter gene connected downstream from a transcription control region, wherein said transcription control region substantially consists of a recognition sequence of said allylhydrocarbon receptor and a minimum promoter which can function in said cell and

(b) a selective marker gene which can function in said cell;  
provided that the following gene (c):

(c) a reporter gene connected downstream from a promoter which transcription activity is unchanged by having said responsive transcription control factor contacted with a ligand of said ligand-responsive transcription control factor, said reporter gene (c) coding a protein which can be differentiated from the protein coded by said gene

(a)  
is not present in said cell.

10. Use of an animal cell according to any one of claims 1 to 9 for evaluating an agonist activity or antagonist activity of a chemical substance over the transcription promoting ability of a ligand-responsive transcription control factor, in a reporter assay measuring the amount of a reporter gene under transcription control of said ligand-responsive transcription control factor.

11. A method for evaluating a chemical substance to have agonist activity over the transcription promoting ability of a ligand-responsive transcription control factor, said method comprising:

- (i) culturing an animal cell according to any one of claims 1 to 9 in the presence of the chemical substance;
- (ii) measuring the expression amount of a reporter gene in said cell and

(iii) assessing said chemical substance to have agonist activity over the transcription promoting ability of the ligand-responsive transcription control factor when the measured value of expression amount of said reporter gene introduced into said cell is larger than a measured value of expression amount of said reporter gene in the absence of said chemical substance.

12. A method for evaluating a chemical substance to have antagonist activity over the transcription promoting ability of a ligand-responsive transcription control factor, said method comprising:

- (i) culturing an animal cell according to any one of claims 1 to 9 in the presence of the chemical substance and a ligand of said ligand-responsive transcription control factor;
- (ii) measuring the expression amount of a reporter gene in said cell and
- (iii) assessing said chemical substance to have antagonist activity over the transcription promoting ability of the ligand-responsive transcription control factor when the measured value of expression amount of said reporter gene introduced into said cell is smaller than a measured value of expression amount of said reporter gene in the presence of said ligand and the absence of said chemical substance.

13. A measuring kit comprising an animal cell according to any one of claims 1 to 9.

14. A method for obtaining an animal cell for measuring the ability to control the activity of a ligand-responsive transcription control factor, said method comprising:

(i) introducing into an animal cell, a DNA comprising in a molecule the following genes (a) and (b):

(a) a reporter gene connected downstream from a transcription control region, wherein said transcription control region substantially consists of a recognition sequence of said ligand-responsive transcription control factor and a minimum promoter which can function in said cell, and

(b) a selective marker gene which can function in said cell, said animal cell being

an animal cell that comprises a DNA comprising a gene coding the ligand-responsive transcription control factor introduced thereto before, after or during the same time of above step (i) or that naturally having an ability to express the gene coding the ligand-responsive transcription control factor, provided that a reporter gene (c) connected downstream from a promoter which transcription activity is unchanged by having said responsive transcription control factor contacted with a ligand of said ligand-responsive transcription control factor, said reporter gene (c) coding a protein which can be differentiated from the protein coded by said gene (a), is not

present in the cell; and

- (ii) recovering from the transformed cell obtained from step (i), a transformed cell having said introduced DNA securely maintained therein.

15. The method according to claim 14, wherein said cell is an animal cell that comprises a DNA comprising a gene coding the ligand-responsive transcription control factor introduced thereto before, after or during the same time of the step (i).

16. The method according to claim 15, wherein the DNA comprising a gene coding the ligand-responsive transcription control factor, comprises in a molecule, a selective marker gene which can function in said cell and which codes a phenotype different from that of the gene (b).

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